

BIOMEDICAL EFFECTS OF MICROWAVE RADIATION*

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IN reviewing and updating our knowledge of the biomedical effects of microwave radiation, I am reminded of past meetings with the same goal: the Triservice meetings—Richmond, Warsaw, Boulder, Amherst, Airlie, and several others.

Nearly three decades ago our major concerns seemed to center about cataractogenesis and the distinction between thermal and nonthermal effects. And while these concerns are still of intense current interest, we have now added such concepts as frequency windows, intensity windows, special modulation effects, and the critical importance of body size and shape in determining the absorption of radiofrequency radiation of specified frequency and polarization. Increased attention is now given to immunologic, behavioral, and central nervous system effects, and the lingering but largely unresolved questions about long-term low level effects. To say that these older problems have been solved or that adequate attention is now given to them would be a misstatement of fact.

Many earlier studies attempt to correlate exposure levels with observed biological effects. It was, and unfortunately still is, customary to express environmental levels of radiation in terms of average power density (W/m^{-2} or mW/cm^{-2}) or “equivalent far-field” average power density, with little attention to the specification of waveform, polarization, reflections, scattering, geometry of the body being irradiated, or whether exposure conditions are in the near or far-field of the radiating source. Specification of exposure levels without some qualification pertaining to the aforementioned factors should be considered obsolete practice.

An important result of our present knowledge is the realization that the usefulness of most studies published more than a decade ago is open to serious question.

*Presented as part of a *Symposium on Health Aspects of Nonionizing Radiation* sponsored by the Subcommittee on Public Health Aspects of Energy of the committee on Public Health of the New York Academy of Medicine and held at the Academy April 9 and 10, 1979.